

Confirmation of the factorial structure of neighbourhood attachment and neighbourhood identity scale

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Abstract

Previous studies indicate that attachment and identity imply different relationships with a place, but that the high correlation between both variables often hinders their empirical and conceptual differentiation. Such lack of clarity of the relationship between different place-related concepts is for many the main obstacle to furthering progress in this field. In this study, a confirmatory factorial analysis was conducted to verify the factorial structure of the neighbourhood attachment and neighbourhood identity scale developed by Hernández, Hidalgo, Salazar-Laplace, and Hess (2007). Moreover a simultaneous comparison was made of two groups based on the variable, length of residence. The results corroborate the structure of both factors, validate it as being the same in both groups, and assess the influence of length of residence on intensity of bond.

Keywords: Validation of scale, place attachment, place identity, neighbourhood, length of residence.

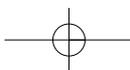
Confirmación de la estructura factorial de una escala de apego e identidad con el barrio

Resumen

Estudios previos indican que el apego y la identidad implican relaciones diferentes con un lugar, pero la alta correlación existente entre ambas variables a menudo dificulta su diferenciación empírica y conceptual. Esta falta de claridad en la relación entre distintos conceptos relacionados con el lugar representa para muchos el principal obstáculo para el avance en este campo. En este trabajo se realizó un análisis factorial confirmatorio para verificar la estructura factorial de la escala de apego e identidad con el barrio, desarrollada por Hernández, Hidalgo, Salazar-Laplace & Hess (2007). Asimismo, se compararon simultáneamente dos grupos creados en función de la variable tiempo de residencia. Los resultados permiten confirmar la estructura de los dos factores, validar que es la misma para los dos grupos comparados y valorar la influencia del tiempo de residencia en la intensidad de los vínculos.

Palabras clave: Validación de escala, apego al lugar, identidad de lugar, vecindario, tiempo de residencia.

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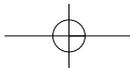
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Introduction

Research on people-place relations has increased significantly in recent years, involving more than 60% of all articles issued in the last decade (Levicka, in press). A review of the works published in the past year confirms the continuation of this increase with the appearance of monographs and extensive theoretical revisions on this topic (Devine-Wright & Clayton, 2010; Levicka, in press). As already pointed out by numerous authors (Giuliani & Feldman, 1993; Levicka, in press; Mannarini, Tartaglia, Fedi, & Greganti, 2006; Pretty, Chipuer & Bramston, 2003), one of the main features of this area is the terminological and conceptual ambiguity that has given rise to the appearance of many similar concepts, whether theoretical or empirical, which are difficult to discriminate and which are seriously hindering progress in this field. In previous studies (Hernández, Hidalgo, Salazar-Laplace, & Hess, 2007; Hidalgo & Hernández, 2001) we have called for the need to scrutinize conceptual and morphological accuracy as a base on which to build the foundations for furthering subsequent research. Accordingly, in this study we have chosen 2 of the more widely accepted concepts about which there is a higher level of consensus—place attachment and place identity—with a view to creating a reliable and valid measurement tool that will enable us to evaluate them accurately and consequently examine the knowledge of these processes more closely. This tool has been used (Hernández et al., 2007) with good results of internal consistency, although the factorial structure was not tested. Thus, one of the objectives of this study will be to verify the factorial structure of this scale.

Some of the research conducted into the bonds established by people with their surroundings indicates that attachment and identity imply different relationships with a place. For example, changing residence has been seen to have important immediate effects on place attachment but does not alter identity with the previous residence, and only after a long period of time spent in the new place does it gradually become incorporated into the individual's own identity (Twigger-Ross, Bonaiuto & Breakwell, 2003; Wester-Herber, 2004). It has also been confirmed that feelings of attachment often evolve into feelings of pride about a residential area and its appearance, providing personal and group identity (Brown & Perkins, 1992; Chawla, 1992; Twigger-Ross & Uzzell, 1996; Valera, Guàrdia, & Pol, 1998; Valera & Pol, 1994). For some authors, this is proof that place attachment precedes place identity (Hernández et al., 2007; Knez, 2005; Moore, 2000). Place attachment implies affective bonds between people and their surroundings, and is nourished through daily encounters with neighbours, personalization and feelings toward the neighbourhood (Brown & Werner, 1985; Werner, Altman, Brown, & Ginat, 1993).

Place identity, on the other hand, refers to a conception of self that has been constructed on the basis of the place to which it belongs and incorporates elements related to the public image of that place (Hay, 1998; Uzzell, Pol, & Badenas, 2002). For Proshansky, Fabian, and Kaminoff (1983), place identity is defined as a substructure of personal identity based on a set of cognitions relating to the physical world in which we interact through memories, ideas, feelings, preferences, or meaningful experiences, and associated with a large number of highly complex physical elements that shape day-to-day living. In other words, place identity would be a component of personal identity, which develops according to the elements that typify a specific area and the nature of the interactions that occur there (Wester-Herber, 2004). According to Breakwell's model (1992), 4 factors contribute to the formation and regulation of this bond: distinctiveness of place, continuity in the place, self-esteem



associated with place and self-efficacy to act within that context (Twigger-Ross & Uzzell, 1996). For Knez (2006), the permanence of places in the autobiographical memory through these 4 factors is what ultimately gives significance to identity.

Attempts to clarify the relationship between place attachment and place identity have given rise to different theoretical postures: understanding them both to be equal, one encompassing the other and vice versa, or as dimensions of another more general construct (Hernández et al, 2007). In this respect, and as pointed out by numerous authors (Giuliani & Feldman, 1993; Levicka, in press; Mannarini et al., 2006; Pretty, Chipuer, & Bramston, 2003), differences of theory and measurement should be established between both concepts.

With this in mind, Hernández et al. (2007) devised a scale that would facilitate the evaluation of these 2 different affective bonds with places of residence. We aimed to select what was specific to each concept, so that the place attachment scale would incorporate the most affective aspects (the extent to which individuals like living there, the extent to which they feel attached, the extent to which they want to return to that place, etc.), and the place identity scale would incorporate the most representative aspects (degree of identification with place, feeling of belonging, etc.). Attachment and identity were evaluated according to 3 types of place: neighbourhood, city and island. The internal consistency results of the scale were above 0.94 in all cases, thus indicating good reliability.

Other authors (Vidal, Valera, & Peró, 2010) analyze the factorial structure of this tool with the intention of verifying whether the differentiated measurement of attachment and identity can be sustained or whether they are aspects of the same concept. These authors obtain a two-factor structure: attachment and identity, although a low adjustment of some indices and not contrasting the model according to length of residence require new analyses to lend greater validity to the scale.

Moreover, most studies show a high level of both place attachment and place identity because participants are people who have lived in that place for a long period of time (Brown, Perkin, & Brown, 2003). However, other studies have revealed that attachment and identity function differently for natives and non-natives. For example, Hay (1998) analyzes a sense of place in several types of samples such as long-term residents, out-migrants, tourists, long-term campers, holiday home owners, and resident school children, showing differences in their place attachment. Furthermore, the results obtained by Hernández et al. (2007) also show that place attachment and place identity function similarly for natives born and raised in the same place but differently for non-natives. Hence, for this paper, a sample of non-natives was chosen to evaluate the differences between attachment and identity.

This research was designed with a view to studying the differences between neighbourhood attachment and neighbourhood identity. For this purpose, the levels of both kinds of bonds were analyzed as a function of length of residence in a neighbourhood. Specifically, the following general hypotheses were tested:

1. Attachment and identity with the neighbourhood would constitute 2 different yet related factors.

2. Attachment is a bond that first develops from initial interactions with the neighbourhood of residence, whereas identity develops after a certain amount of time has passed. This implies similar scores in terms of neighbourhood attachment for different lengths of residence, whereas the scores for identity will be lower for groups that have lived in the neighbourhood for less time than for groups that have been living there longer.

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Method

Participants

A total of 496 students took part in this study from the University of Barcelona (65%) and the University of La Laguna (Spain) (35%). Approximately 79% were women and the rest were men, aged between 18 and 30 ($M = 20.76$ years old; $SD = 2.58$). All participants were classed as non-native (they were not born or had not always lived in that neighbourhood), with an average length of residence in the neighbourhood of 4.4 years ($SD = 5.24$).

Materials and procedure

Participants completed an anonymous self-reporting questionnaire to gauge their responses to several variables related to the neighbourhood in which they live, using Likert-type scales ranging from 1 = Not at all, to 6 = Very much. This questionnaire included 3 sections:

Neighbourhood Attachment. Scale comprising 8 items (for example, "I like living in this neighbourhood") devised by Hernández et al. (2007) to measure neighbourhood attachment. The scale presented a Cronbach alpha reliability coefficient of .94.

Neighbourhood Identity. Scale comprising 4 items (for example, "I feel that I belong to this neighbourhood") devised by Hernández et al. (2007). The scale presented a Cronbach alpha reliability coefficient of .95.

Sociodemographic variables. Participants answered the questionnaire anonymously indicating their gender, age, and the length of time they have been living in their neighbourhood.

The questionnaire was administered during practical lessons as part of the Psychology degree course. The average time taken by participants to complete the questionnaire was 20 minutes. Two types of questionnaire were created, and the order of presentation of the items within each subscale was modified.

Results

The results are presented in 2 sections: 1) the factorial composition of the neighbourhood attachment and neighbourhood identity scale, and 2) differences in the mean values for neighbourhood attachment and neighbourhood identity are analyzed in accordance with the length of residence in the neighbourhood.

Factorial structures for Neighbourhood Attachment and Neighbourhood Identity

A confirmatory factorial analysis was conducted to verify the factorial structure of the neighbourhood attachment and neighbourhood identity scale, confirming which items have more statistical weight in one scale and not in the other, thus demonstrating that different concepts are being measured. Covariance structure analysis was performed using the EQS 6.1 program (Bentler, 2005), conducted over 3 stages. In the first stage, the measurement model was estimated for the 2 latent factors described (Neighbourhood Attachment and Neighbourhood Identity) for the joint observations of 2 percentile 'groups' (first and fourth quartile) created on the basis of the variable "length of residence in the neighbourhood". In this stage, only indicators with a factorial load on a single significant factor ($p < 0.01$) were retained. Through this process, 9 items were kept from the initial group of 12 (see Table I).

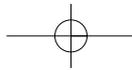


TABLE I
Standardized solution

Variables	Neighbourhood Attachment	Neighbourhood Identity
I like living in this neighbourhood	.717**	
I would regret having to move to another neighbourhood.	.690**	
When I've been away for a while, I really want to come back.	.922**	
When I'm away, I miss this neighbourhood.	.911**	
This is my favourite neighbourhood to live in.	.683**	
When I'm away, I'm happy to come back.	.895**	
This neighbourhood is part of my identity.		.854**
I feel I belong to this neighbourhood.		.956**
I feel like I'm from this neighbourhood.		.943**

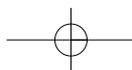
$\chi^2(df = 58) = 81.098, p = .02$; NFI = .962; NNFI = .983; CFI = .988; RMSEA = .057 (CI = .021, .084)

In the second stage, an attempt was made to fit the measurement model using 2 factors for each of the 2 percentile sub-groups selected, with a view to determining whether the model adequately generated the matrices of sample variances and covariances for both sub-sets. The aim was to demonstrate the invariance of the measurement model between the groups. For this purpose, restrictions were incorporated that required the different estimated parameters to be the same in the two groups formed. Through successive estimations, significant restrictions were eliminated and revealed inequalities in the proposed model between the percentile time groups.

The final stage involved estimating a structural model for covariances and means (moments). At this point, the aim was to determine whether the 2 factors studied presented significantly different means for the 2 groups compared (short and long residence). The means for the factors were compared by freely estimating the mean in 1 group and setting the mean to zero in the other group. These restrictions not only allow the model to be identified, but also fix 1 group as a reference. As a result, the estimated mean value in 1 of the groups would measure the difference from the other, and that difference could be tested by confirming that the null hypothesis is, in actual fact, zero.

To evaluate the fit of each of the estimated models, the fit indices used were largely insensitive to the abnormality of observable variables that overcome the difficulties of χ^2 . The indices used were incremental in nature, evaluating the improvement of the estimated model in comparison with a base model (Normed Fit Index (NFI) and Nonnormed Fit Index (NNFI)). Furthermore, the Root Mean Square Error of Approximation (RMSEA) fit indicator was included. Fits between the postulated model and the observed data were considered to be good if they generated values equal to or above 0.9 for the incremental indices. As regards the RMSEA, Hu and Bentler (1999) indicate that acceptable models must produce RMSEA values equal to or less than 0.07.

Table I presents the model estimated by means of the simultaneous estimation of measurement models in the 2 subgroups (Q1 vs. Q4). For both groups, the first factor, Neighbourhood Attachment, is made up of 6 items from the 8 items of the initial scale (Hernández et al., 2007), whereas Neighbourhood Identity is made up of 3 items (of the initial 4). The items eliminated from the place attachment scale were "I feel attached to this neighbourhood" and "I feel at home in this neighbourhood"; "I identify with this neighbourhood" was removed from the identity scale.



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The pair estimations of the models produced an equal structure for the 2 groups analyzed (short and long period of residence), and both factors maintained a correlation of 0.781 ($p < 0.001$). As regards the fits of the proposed structural models for covariance and means, highly acceptable values were obtained in the incremental index criteria (NFI, NNFI, and CFI over 0.90) and mean residuals (RMSEA less than 0.07). All the differences between the factors were equally significant ($p < 0.05$). The mean value for Neighbourhood Attachment was significantly lower in group 1 (shorter time) than group 2 ($-0.311, t(248) = -2.687$). Furthermore, the mean value for Neighbourhood Identity was significantly lower in group 1 than in group 2 ($-0.980, t(248) = -6.321$) but with a much higher effect size than detected in the factor Neighbourhood Attachment. The global fit of the estimations for covariances and means measured using McDonald's fit index (MFI) was acceptable, with a value of 0.954.

Differences on Neighbourhood Attachment and Neighbourhood Identity according to length of residence

For a more careful analysis of these differences along with the development of Neighbourhood Attachment and Neighbourhood Identity over time, the participants were grouped according to their length of residence in the neighbourhood and were divided into 9 groups. This classification was performed using the SPSS.15 instruction Ntiles, which divides the sample into groups that contain approximately the same number of cases. Level 1 corresponds to those who have lived in the neighbourhood for the least amount of time and so on up to level 9. More specifically, the 11th (less than 0.50 years of residence), 22nd (from 0.50 to 0.60), 33rd (from 0.61 to 1.25), 44th (from 1.26 to 1.60), 55th (from 1.61 to 2.25), 66th (from 2.26 to 4.00), 77th (from 4.01 to 6.87), 88th, (from 6.88 to 12.58), and 99th (more than 12.59 years of residence in the neighbourhood) percentiles were used as cut-off criteria to create the 9 groups.

With these 9 levels, ANOVA was performed taking Neighbourhood Attachment and Neighbourhood Identity as the dependent variables. The results confirm that there are significant differences between the 9 levels of residence in the neighbourhood in the case of Neighbourhood Identity ($F(8, 485) = 7.41, p < .001, \eta^2 = 0.11$) but not in the case of Neighbourhood Attachment. The tests performed *a posteriori* (Sidak) show that differences are observed between the lower levels (1-6) and higher levels (7-9) (see Table II).

TABLE II
A posteriori comparisons for Place Identity based on fits for multiple comparisons: Sidak

Residence groups	INTER Differences		
	7	8	9
1			-1.073*
2			-1.298*
3			-1.140*
4			-1.223*
5			-.986*
6			-1.043*
7			
8			
9			

* $p < .05$

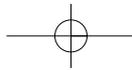
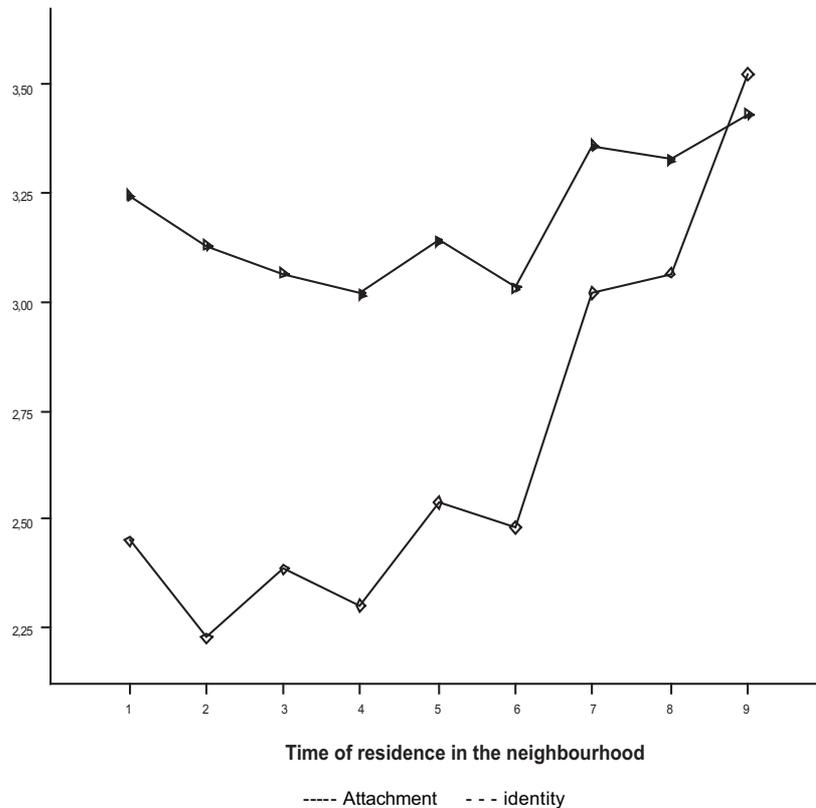


Figure 1 shows the development of Neighbourhood Attachment and Neighbourhood Identity according to these 9 levels.

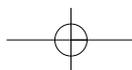
FIGURE 1
Development of attachment and identity with neighbourhood according to length of residence

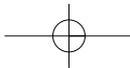


Discussion

The analyses performed yielded a factorial structure that confirms the appropriateness of maintaining place attachment and place identity as two separate factors, but without ruling out that they might be part of the same higher order factor as considered by other researchers (e.g. Hay, 1998; Jorgensen & Stedman, 2001). In this respect, future studies on place attachment and place identity should discriminate between these affective bonds based on the confirmed measures of both concepts.

Regarding the content of items that constitute both factors, we observed on the one hand that the items that make up the place attachment factor highlight the desire to maintain the bond and relationship with place (I like living in this neighbourhood). This endorses Hidalgo and Hernández's findings (2001) that attachment has a strong behavioural component and indicates a clear wish to remain (When I'm away, I'm happy to come back). On the other hand, indicators of identity with place distinguish the bond with place in terms of feelings of belonging (I feel like I'm from this neighbourhood) and as a feature that forms part of their identity (This neighbourhood is part of my identity). In both cases the eliminated items emphasize general feelings (e.g. feeling attached or at home) that may prove to be more ambiguous and enhance the superimposition of both bonds, which has been the case until now.





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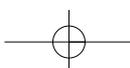
The different patterns observed for place attachment and place identity for people who have been living in the neighbourhood for a short period of time and those who have resided there for longer confirm what has been found in other studies (Twigger-Ross et al., 2003; Wester-Herber, 2004) and indicate that neighbourhood attachment scarcely changes over time and that a person can feel a high level of neighbourhood attachment within just a few months of moving there. However, after only a short period of residence in the neighbourhood, neighbourhood identity is a bond that presents low scores and a clear increase is not observed until after 4-5 years' residence, until the subjects begin to incorporate feeling of belonging to this neighbourhood as an important part of their identity.

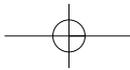
In this respect, these results also corroborate the need to bear in mind the difference between native and non-native participants outlined in previous studies (Hay, 1998; Hernández et al., 2007). Using samples of native residents or of persons who have lived a long time in that place makes discriminating between both bonds and analyzing the relationship between them more difficult.

These results may be preliminary because the sample mainly comprises female students. Broader conclusions on neighbourhood attachment and identity should be deferred for futures studies assessing the development of both constructs in more representative samples of the general population. In doing so, the analysis of independent data on both physical conditions and cultural issues in the neighbourhood would be especially helpful. In addition to replicating these initial findings, future studies are also needed to explore how to improve current measurements of place attachment and identity using alternative indicators.

References

- BENTLER, P. M. (2005). *EQS 6.1 for Windows*. Los Angeles, CA: Multivariate Software Inc.
- BREAKWELL, G. M. (1992). Processes of self-evaluation: Efficacy and estrangement. In G. M. Breakwell (Ed.), *Social Psychology of Identity and the Self-Concept*. Surrey: Surrey University Press.
- BROWN, B. B. & PERKINS, D. (1992). Disruptions in place attachment. *Human Behavior & Environment: Advances in Theory & Research*, 12, 279-304.
- BROWN, B. B., PERKINS, D., & BROWN, G. (2003). Place attachment in a revitalizing neighborhood: Individual and block levels of analysis. *Journal of Environmental Psychology*, 23, 259-271.
- BROWN, B. B. & WERNER, C. M. (1985). Social cohesiveness, territoriality, and holiday decorations: The influence of cul-de-sacs. *Environment and Behavior*, 17, 539-565.
- CHAWLA, L. (1992). Childhood place attachments. *Human Behavior & Environment: Advances in Theory & Research*, 12, 63-86.
- DEVINE-WRIGHT, P. & CLAYTON, S. (2010). Identity, Place and Environmental Behavior. *Journal of Environmental Psychology*, 30 (3).
- GIULIANI, M. V., & FELDMAN, R. (1993). Place attachment in a developmental and cultural context. *Journal of Environmental Psychology*, 13, 267-274.
- HAY, R. (1998). Sense of place in developmental context. *Journal of Environmental Psychology*, 18, 5-29.
- HERNÁNDEZ, B., HIDALGO, M. C., SALAZAR-LAPLACE, M. E., & HESS, S. (2007). Place attachment and place identity in natives and non-natives. *Journal of Environmental Psychology*, 27, 310-319.
- HIDALGO, M. C. & HERNÁNDEZ, B. (2001). Place attachment: Conceptual and empirical questions. *Journal of Environmental Psychology*, 21, 273-281.
- HU, L., & BENTLER, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6, 1-55.
- JORGENSEN, B. S., & STEDMAN, R. C. (2001). Sense of place as an attitude: Lakeshore owners attitudes toward their properties. *Journal of Environmental Psychology*, 21, 233-248.
- KNEZ, I. (2005). Attachment and identity as related to a place and its perceived climate. *Journal of Environmental Psychology*, 25, 207-218.
- KNEZ, I. (2006). Autobiographical memories for places. *Memory*, 14, 359-377.
- KOROSEC-SERFATY, P. (1976). *Appropriation of space. Proceedings of the Strasbourg conference. IAPC-3. Strasbourg-Lovain La Neuve: CIACO*.
- LEVICKA, M. (in press). Place attachment: How far have we come in the last 40 years? *Journal of Environmental Psychology*.
- MANNARINI, T., TARTAGLIA, S., FEDI, A., & GREGANTI, K. (2006). Image of neighbourhood, self-image and sense of community. *Journal of Environmental Psychology*, 26, 202-214.
- MOORE, J. (2000). Placing home in context. *Journal of Environmental Psychology*, 20, 207-217.
- PRETTY, G. H., CHIPUER, H. M., & BRAMSTON, P. (2003). Sense of place amongst adolescents and adults in two rural Australian towns: The discriminating features of place attachment, sense of community and place dependence in relation to place identity. *Journal of Environmental Psychology*, 23, 273-287.





- PROSHANSKY, H. M., FABIAN, A. K., & KAMINOFF, R. (1983). Place-identity: Physical world socialization of the self. *Journal of Environmental Psychology*, 3, 57-83.
- TWIGGER-ROSS, C. L., BONAIUTO, M. & BREAKWELL, G. (2003). Identity theories and Environmental Psychology. In M. Bonnes, T. Lee & M. Bonaiuto (Eds.), *Psychological Theories for Environmental Issues*. Hants: Ashgate.
- TWIGGER-ROSS, C. L. & UZZELL, D. L. (1996). Place and identity processes. *Journal of Environmental Psychology*, 16, 205-220.
- UZZELL, D., POL, E. & BADENAS, D. (2002). Place identification, social cohesion, and environmental sustainability. *Environment and Behavior*, 34 (1), 26-53.
- VALERA, S., GUÁRDIA, J., & POL, E. (1998). A study of the symbolic aspects of space using non-quantitative techniques of analysis. *Quality & Quantity*, 32, 367-381.
- VALERA, S. & POL, E. (1994). El concepto de identidad social urbana: una aproximación entre la Psicología Social y la Psicología Ambiental. *Anuario de Psicología*, 62, 5-24.
- VIDAL, T., VALERA, S., & PERÓ, M. (2010). Place attachment, place identity and residential mobility in undergraduate students. *Psychology*, 1 (3), 353-369.
- WERNER, C. W., ALTMAN, I., BROWN, B. B., & GINAT, J. (1993). Celebrations in personal relationships: A transactional/dialectic perspective. In S. Duck (Ed.), *Social context and relationships: Understanding relationship processes series* (Vol. 3, pp. 109-138). Newbury Park, CA: Sage.
- WESTER-HEBER, M. (2004). Underlying concerns in land-use conflicts-the role of place identity in risk perception. *Environmental Science & Policy*, 7, 109-116.

